REMARKS

Claims 1 through 4 and 20 have been canceled. Claims 5 and 15 have been amended. Claims 5 through 19 remain in the application.

The drawings were objected to because they do not include reference sign "34" and "56". Applicant respectfully traverses this objection.

The specification has been amended to add reference sign "56". Also, attached to this Amendment is a copy of FIG. 2 with corrections in red to add reference sign "34" for the Examiner's approval. Formal or corrected drawings will be filed upon the Examiner's approval of the proposed drawing correction. It is respectfully submitted that the drawings overcome the objection.

Claims 1 through 20 were rejected under 35 U.S.C. § 103 as being unpatentable over Singh et al. (U.S. Patent No. 6,760,693) in view of Shimiza (U.S. Patent No. 5,808,616). Applicant respectfully traverses this rejection.

U.S. Patent No. 6,760,693 to Singh et al. discloses a method of integrating computer visualization for the design of a vehicle. The tools 100 used by a method of integrating computer visualization for the design of a vehicle include a knowledge-based engineering library 112 stored on an electronic storage device (not shown). The tools 100 further include a computer system 122 to implement a method 120 to integrate computer visualization with the design of the vehicle 10. The computer system 122 includes a processor and a memory 124a, which can provide a display and animation of a system, such as the vehicle 10, on a display such as a video terminal 124b. In block 210, the user 126 defines a vehicle body structure with respect to the input parameter. The vehicle body structure is a low-level geometric model represented by digital data points or polygons. For example, the user 126 may define an existing vehicle body structure from the vehicle library 114 which embodies the architectural intent of the vehicle 10 to

be designed. The vehicle body structure may also be a new vehicle body structure obtained from a digital scan of a clay styling model of the exterior of the vehicle. Further, the vehicle body structure may be an assemblage of various portions of existing body structures. In this example, each component part contained within the vehicle body structure is organized within the memory 124a of the computer system 122 in a hierarchal data tree structure. The methodology advances to diamond 215. In block 245, the methodology assesses the morphed vehicle model using a computer-aided engineering analysis tool 118. For example, a computer aided engineering analysis tool 118, such as finite element analysis, may be used to determine if a predetermined structural criteria for the morphed vehicle model is satisfied. An ergonomic packaging analysis may be conducted to determine if a predetermined packaging criteria is met. Advantageously, the morphed low-level geometric model can be evaluated and modified more expeditiously than a high-level geometric model. Singh et al. does <u>not</u> disclose establishing cutting planes and a cutting path by locating at least a first cutting plane and a last cutting plane on a computer generated model, wherein the first and last cutting planes define the cutting path, and automatically generating at least one section by cutting the computer generated model into the at least one section along the cutting path. Singh et al. also does <u>not</u> disclose determining if the model is a finite element analysis (FEA) model and simplifying the FEA model by replacing a shell element along the cutting path with a beam element.

U.S. Patent No. 5,808,616 to Shimizu discloses a shape modeling method and apparatus utilizing ordered parts lists for designating a part to be edited in a view. At step 4, a method of generating a three-dimensional shape from the cross section of a part adopted as the part of interest at step 2 or 3 is designated. Method of generation include "pushing" a cross section or cutting a cross section. A menu for the generation method is displayed on the screen of the display unit 4 by selecting "3dGEN" of menu 22d (FIG. 6A). More specifically, a command

"PUSH"or "CUT", etc., is displayed on the display screen. The user selects the command appearing on the screen. The designated information is stored in the memory device 8. Shimizu does not disclose establishing cutting planes and a cutting path by locating at least a first cutting plane and a last cutting plane on a computer generated model, wherein the first and last cutting planes define the cutting path, and automatically generating at least one section by cutting the computer generated model into the at least one section along the cutting path. Shimizu also does not disclose determining if the model is a finite element analysis (FEA) model and simplifying the FEA model by replacing a shell element along the cutting path with a beam element.

In contradistinction, claim 5, as amended, clarifies the invention claimed as a method of section cutting and analysis of a computer model. The method includes the steps of selecting a computer generated model of a structural member, wherein the computer generated model is stored in a memory of a computer system. The method also includes the steps of establishing cutting planes and a cutting path by locating at least a first cutting plane and a last cutting plane on the computer generated model, wherein the first and last cutting planes define the cutting path, and automatically generating at least one section by cutting the computer generated model into the at least one section along the cutting path. The method further includes the steps of maintaining the section in a memory of the computer system, automatically analyzing the section using a computer aided engineering (CAE) analysis, determining if the CAE analysis of the section meets a predetermined criteria, modifying the section if the predetermined criteria is not met, and using the section in the design of the model if the predetermined criterion is met. Claim 15 has been amended similar to claim 5 and claims the feature of determining if the model is a finite element analysis (FEA) model and simplifying the FEA model by replacing a shell element along the cutting path with a beam element.

The United States Court of Appeals for the Federal Circuit (CAFC) has stated in

determining the propriety of a rejection under 35 U.S.C. § 103, it is well settled that the obviousness of an invention cannot be established by combining the teachings of the prior art absent some teaching, suggestion or incentive supporting the combination. See In re Fine, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988); Ashland Oil, Inc. v. Delta Resins & Refractories, Inc., 776 F.2d 281, 227 U.S.P.Q. 657 (Fed. Cir. 1985); ACS Hospital Systems, Inc. v. Montefiore Hospital, 732 F.2d 1572, 221 U.S.P.Q. 929 (Fed. Cir. 1984). The law followed by our court of review and the Board of Patent Appeals and Interferences is that "[a] prima facie case of obviousness is established when the teachings from the prior art itself would appear to have suggested the claimed subject matter to a person of ordinary skill in the art." In re Rinehart, 531 F.2d 1048, 1051, 189 U.S.P.Q. 143, 147 (C.C.P.A. 1976). See also In re Lalu, 747 F.2d 703, 705, 223 U.S.P.Q. 1257, 1258 (Fed. Cir. 1984) ("In determining whether a case of prima facie obviousness exists, it is necessary to ascertain whether the prior art teachings would appear to be sufficient to one of ordinary skill in the art to suggest making the claimed substitution or other modification.")

None of the references cited, either alone or in combination with each other, teaches or suggests the claimed invention of claims 5 and 15. Specifically, Singh et al. '693 merely discloses a method of integrating computer visualization for the design of a vehicle Singh et al. '693 lacks establishing cutting planes and a cutting path by locating at least a first cutting plane and a last cutting plane on a computer generated model, wherein the first and last cutting planes define the cutting path, and automatically generating at least one section by cutting the computer generated model into the at least one section along the cutting path. Singh et al. '693 also lacks determining if the model is a finite element analysis (FEA) model and simplifying the FEA model by replacing a shell element along the cutting path with a beam element.

Shimizu '616 <u>merely</u> discloses a shape modeling method and apparatus utilizing ordered parts lists for designating a part to be edited in a view. Shimizu '616 lacks establishing cutting planes and a cutting path by locating at least a first cutting plane and a last cutting plane on a computer generated model, wherein the first and last cutting planes define the cutting path, and automatically generating at least one section by cutting the computer generated model into the at least one section along the cutting path. Shimizu '616 also lacks determining if the model is a finite element analysis (FEA) model and simplifying the FEA model by replacing a shell element along the cutting path with a beam element. As such, there is no suggestion or motivation in the art to combine Singh et al. '693 and Shimizu '616 together.

The present invention sets forth a unique and non-obvious combination of a method provides for section generation, analysis and modification of the selected portion of the structural model for quick studies of various section design concepts. The references, if combinable, fail to teach or suggest the combination of a method of section cutting and analysis of a computer model including the steps of selecting a computer generated model of a structural member, wherein the computer generated model is stored in a memory of a computer system, establishing cutting planes and a cutting path by locating at least a first cutting plane and a last cutting plane on the computer generated model, wherein the first and last cutting planes define the cutting path, automatically generating at least one section by cutting the computer generated model into the at least one section along the cutting path, maintaining the section in a memory of the computer system, automatically analyzing the section using a computer aided engineering (CAE) analysis, determining if the CAE analysis of the section meets a predetermined criteria, modifying the section if the predetermined criteria is not met, and using the section in the design of the model if the predetermined criterion is met as claimed by Applicant.

Further, the CAFC has held that "[t]he mere fact that prior art could be so modified would not have made the modification obvious unless the prior art suggested the desirability of the modification". In re Gordon, 733 F.2d 900, 902, 221 U.S.P.Q. 1125, 1127 (Fed. Cir. 1984). The Examiner has failed to show how the prior art suggested the desirability of modification to achieve Applicant's invention. The Examiner has failed to establish a case of prima facie obviousness. Therefore, it is respectfully submitted that claims 5 and 15 and the claims dependent therefrom are allowable over the rejection under 35 U.S.C. § 103.

Obviousness under § 103 is a legal conclusion based on factual evidence (In re Fine, 837 F.2d 1071, 1073, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988), and the subjective opinion of the Examiner as to what is or is not obvious, without evidence in support thereof, does not suffice. Since the Examiner has not provided a sufficient factual basis, which is supportive of his/her position (see In re Warner, 379 F.2d 1011, 1017, 154 U.S.P.Q. 173, 178 (C.C.P.A. 1967), cert. denied, 389 U.S. 1057 (1968)), the rejection of claims 5 through 19 is improper. Therefore, it is respectfully submitted that claims 5 through 19 are allowable over the rejection under 35 U.S.C. § 103.

Based on the above, it is respectfully submitted that the claims are in a condition for allowance, which allowance is solicited.

Respectfully submitted,

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Date: February 4, 2004

Attorney Docket No.: 0693.00251
Ford Disclosure No.: 200-0658